

Project Proposal: Failure Analyzer Application



Idea:

Our idea is to create a fuzzy logic application whose purpose is to define the industrial machine's degree of failure. It is based on factors provided by the user when he does the diagnostics. these pieces of information can be types of unusual acts done by the machines which will help the app to execute the fuzzy calculations to finally show us the result.

Software used:

Anaconda to write and simulate python codes in Jupyter notebook.

LyX 2.3 to create the proposal and the report

We can use also Pluto. jl to write Julia codes

Virtual Studio Code to create our web page in HTML

Teammates:

Seif Eddine Khadhraoui:

Code development/report and proposal organization

Leila Megdiche :

Slides creation/HTML page designing

Yosra Mechergui:

Report and proposal typing with Lyx/ logo designing

Related papers:

- Research article named 'Simpful: A User-Friendly Python Library for Fuzzy Logic'

Article in International Journal of Computational Intelligence Systems · January 2020

- 'Deep Neuro-Fuzzy System with Python with Case Studies and Applications from the industry'

By Himanshu Singh and Yunis Ahmad Lone.

Dataset:

Types of failure	Failures	Description of failures	Degree of failure
Electrical Failures	Power supply issues	Voltage fluctuations	Minor
		Power surges	Major
		Power outages	Catastrophic
	Electrical overload	Short circuits	Catastrophic
		Faulty wiring	Major
		Electrical motor insulation failure	Catastrophic
	Control system issues	Reduced performance	Major
		Delayed response time	Major
		Damaged control panel HMI	Minor
		Programming errors	Catastrophic
	Corrosion	Reduced conductivity	Major
		Increased resistance	Major
		Electrical failure	Minor
Mechanical failures	Structural issues	Bending	Minor
		Cracking	Major
		Damage to the support structure	Catastrophic
	Alignment issues	Misalignment of mechanical components	Catastrophic
	Contamination	Jamming	Major
		Damage to components	Catastrophic
	Lubrification issues	Overheating	Major
		Increasing wear and tear	Major
		Lack of lubrication or use of bad one	Major